4-31452A.ST25.txt SEQUENCE LISTING

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4-31452A.ST25.txt

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Lys Gly Leu Tyr Leu Phe Thr Ala Ser Asn Asn Ser Lys Lys Leu Glu 305 310 315 320

Val Asn Leu Ser Thr Ala Lys Gly Leu Met Phe Asp Ala Thr Ala Ile 325 330 335

Ala Ile Asn Ala Gly Asp Gly Leu Glu Phe Gly Ser Pro Asn Ala Pro 340 345 350

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# 4-31452A.ST25.txt

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### 4-31452A.ST25.txt

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80				_											Gly .		
545					550			501		555					560		
313					330										500		
cac 28	aac	tac	att	aat	gaa	ata	ttt	gcc	aca	tcc	tct	tac	act	ttt	tca	1	L 7
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Page 15

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Lys Glu Pr 19	_	Thr Gln	Asn Gl	ly Lys	Leu Gly	Leu 205	Lys	Tyr	Gly
Ala Pro Le 210	ı His Val	Thr Asp 215	_	eu Asn	Thr Leu 220		Val	Ala	Thr
Gly Pro Gl	y Val Thr	Ile Asn 230	Asn Th	nr Ser	Leu Glr 235	Thr	Lys	Val	Thr 240
Gly Ala Le	ı Gly Phe 245	_	Gln G	ly Asn 250	Met Glr	Leu	Asn	Val 255	Ala
Gly Gly Le	a Arg Ile 260	Asp Ser		sn Arg 65	Arg Leu	Ile	Leu 270	Asp	Val
Ser Tyr Pr 27	_	Ala Gln	Asn Gl 280	ln Leu	Asn Leu	Arg 285	Leu	Gly	Gln
Gly Pro Le 290	ı Phe Ile	Asn Ser 295		is Asn	Leu Asp		Asn	Tyr	Asn
Lys:Gly Le 305	ı Tyr Leu	Phe Thr	Ala Se	er Asn	Asn Ser 315	Lys	Lys	Leu	Glu 320
Val Asn Le	ı Ser Thr 325	_	Gly Le	eu Met 330	Phe Asp	Ala	Thr	Ala 335	Ile
Ala Ile As	n Ala Gly 340	Asp Gly		lu Phe 45	Gly Ser	Pro	Asn 350	Ala	Pro
Asn Thr As		. Lys Thr	Lys I] 360	le Gly	His Gly	Leu 365	Glu	Phe	Asp
Ser Asn Ly 370	s Ala Met	Val Pro	_	eu Gly	Thr Gly		Ser	Phe	Asp

Ser 385	Thr	Gly	Ala	Ile	Thr 390	Val	Gly	Asn	Lys	Asn 395	Asn	Asp	Lys	Leu	Thr 400
Leu	Trp	Thr	Thr	Pro 405	Ala	Pro	Glu	Ala	Asn 410	Cys	Arg	Leu	Asn	Ala 415	Glu
Lys	Asp	Ala	Lys 420	Leu	Thr	Leu	Val	Leu 425	Thr	Lys	Cys	Gly	Ser 430	Gln	Ile
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Pro	Val 530	Thr	Leu	Thr	Ile	Thr 535	Leu	Asn	Gly	Thr	Gln 540	Glu	Thr	Gly	Asp
Thr 545	Thr	Pro	Ser	Ala	Tyr 550	Ser	Met	Ser	Phe	Ser 555	Trp	Asp	Trp	Ser	Gly 560
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15

1

1

tat gac acg gaa acc ggt cct cca act gtg cct ttt ctt act cct ccc 96

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro

20

25

30

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Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser

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Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu

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Gln	Asn	Val	Thr	Thr	Val	Ser	Pro	Pro	Leu	Lys	Lys	Thr	Lys	Ser	Asn		
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2+2	224	at a	~~~	2+2	tat	~~~		at a	202	~++	200	<b>+ a a</b>	~~~	~~~	at a		2
36		_								_	acc			_			3
H	Asn	Leu		lle	Ser	Ala	Pro		Thr	Val	Thr	Ser	Glu	Ala	Leu		
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1111	vai		AΙα	ALG	ALG	110		MCC	vai	AΙα	Ory		1111	пец	1111		
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### 4-31452A.ST25.txt

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Page 23

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Pro 545	Ser	Ala	Tyr	Ser	Met 550	Ser	Phe	Ser	Trp	Asp 555	Trp	Ser	Gly	His	Asn 560
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Ala Gln Glu

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       (1)...(1740)
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                                                          15
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Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
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                                 25
                                                      30
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                                                  45
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76					act		_							_	_	5
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	Tyr	Pro	Phe	Asp	Ala	Gln	Asn	Gln	Leu	Asn	Leu	Arg	Leu	Gly	Gln	
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ggc 12	cct	ctt	ttt	ata	aac	tca	gcc	cac	aac	ttg	gat	att	aac	tac	aac	9
	Pro	Leu	Phe	Ile	Asn	Ser	Ala	His	Asn	Leu	Asp	Ile	Asn	Tyr	Asn	
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Lys	Gly	Leu	Tyr	Leu	Phe	Thr	Ala	Ser	Asn	Asn	Ser	Lys	Lys	Leu	Glu	
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Val	Asn	Leu	Ser	Thr	Ala	Lys	Gly	Leu	Met	Phe	Asp	Ala	Thr	Ala	Ile	
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Ala	Ile	Asn	Ala	Gly	Asp	Gly	Leu	Glu	Phe	Gly	Ser	Pro	Asn	Ala	Pro	•
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224	202	224	000	ata	222	202		a++	~~~	ast	~~~	a+ a	~~~	+++	~~ t	11
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Asn	Thr	Asn	Pro	Leu	Lys	Thr	Lys	Ile	GГУ	His	Gly	Leu	Glu	Phe	Asp	
		355					360					365				
tca	aac	aad	act	ato	att	cct	222	cta	aaa	act	aac	ctt	act	+++	gac	11
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ser	Asn	ьys	Ата	мет	vaı	Pro	Lys	Leu	GIY	Thr	GIY	Leu	Ser	Pne	Asp	
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age	aca	aat	acc	att	aca	ata	ന്നു	aac	222	aat	aat	ast	aac	cta	act	12
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## 4-31452A.ST25.txt 385 390 395 400

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	Asp	Ala	Lys	Leu	Thr	Leu	Val	Leu	Thr	Lys	Cys	Gly	Ser	Gln	Ile	
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Page 32

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# 4-31452A.ST25.txt 1 5 10 15

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Phe	Val	Ser 35	Pro	Asn	Gly	Phe	Gln 40	Glu	Ser	Pro	Pro	Gly 45	Val	Leu	Ser
Leu	Arg 50	Leu	Ser	Glu	Pro	Leu 55	Val	Thr	Ser	Asn	Gly 60	Met	Leu	Ala	Leu
Lys 65	Met	Gly	Asn	Gly	Leu 70	Ser	Leu	Asp	Glu	Ala 75	Gly	Asn	Leu	Thr	Ser 80
Gln	Asn	Val	Thr	Thr 85	Val	Ser	Pro	Pro	Leu 90	Lys	Lys	Thr	Lys	Ser 95	Asn
Ile	Asn	Leu	Glu 100	Ile	Ser	Ala	Pro	Leu 105	Thr	Val	Thr	Ser	Glu 110	Ala	Leu
Thr	Val	Ala 115	Ala	Ala	Ala	Pro	Leu 120	Met	Val	Ala	Gly	Asn 125	Thr	Leu	Thr
Met	Gln 130	Ser	Gln	Ala	Pro	Leu 135	Thr	Val	His	Asp	Ser 140	Lys	Leu	Ser	Ile
Ala 145	Thr	Gln	Gly	Pro	Leu 150	Thr	Val	Ser	Glu	Gly 155	Lys	Leu	Ala	Leu	Gln 160
Thr	Ser	Gly	Pro	Leu 165	Thr	Thr	Thr	Asp	Ser 170	Ser	Thr	Leu	Thr	Ile 175	Thr
Ala	Ser	Pro	Pro 180	Leu	Thr	Thr	Ala	Thr 185	Gly	Ser	Leu	Gly	Ile 190	Asp	Leu
Lys	Glu	Pro	Ile	Tyr	Thr	Gln	Asn	Gly Page	_	Leu	Gly	Leu	Lys	Tyr	Gly

# 4-31452A.ST25.txt 195 200 205

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Gly	Ala	Leu	Gly	Phe 245	Asp	Ser	Gln	Gly	Asn 250	Met	Gln	Leu	Asn	Val 255	Ala
Gly	Gly	Leu	Arg 260	Ile	Asp	Ser	Gln	Asn 265	Arg	Arg	Leu	Ile	Leu 270	Asp	Val
Ser	Tyr	Pro 275	Phe	Asp	Ala	Gln	Asn 280	Gln	Leu	Asn	Leu	Arg 285	Leu	Gly	Gln
Gly	Pro 290	Leu	Phe	Ile	Asn	Ser 295	Ala	His	Asn	Leu	Asp 300	Ile	Asn	Tyr	Asn
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Val	Asn	Leu	Ser	Thr 325	Ala	Lys	Gly	Leu	Met 330	Phe	Asp	Ala	Thr	Ala 335	Ile
Ala	Ile	Asn	Ala 340	Gly	Asp	Gly	Leu	Glu 345	Phe	Gly	Ser	Pro	Asn 350	Ala	Pro
Asn	Thr	Asn 355	Pro	Leu	Lys	Thr	Lys 360	Ile	Gly	His	Gly	Leu 365	Glu	Phe	Asp
Ser	Asn 370	Lys	Ala	Met	Val	Pro 375	Lys	Leu	Gly	Thr	Gly 380	Leu	Ser	Phe	Asp
Ser	Thr	Gly	Ala	Ile	Thr	Val	_	Asn Page	_	Asn	Asn	Asp	Lys	Leu	Thr

Ala Gln Glu

## 4-31452A.ST25.txt 385 390 395 400

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	Leu	Ala	Thr 435	Val	Ser	Val	Leu	Ala 440	Gly	Ser	Leu	Ala	Pro 445	Ile	Ser	Gly
	Thr	Val 450	Gln	Ser	Ala	His	Leu 455	Ile	Ile	Arg	Phe	Asp 460	Glu	Asn	Gly	Val
	Leu 465	Leu	Asn	Asn	Ser	Phe 470	Leu	Asp	Pro	Glu	Tyr 475	Trp	Asn	Phe	Arg	Asn 480
,	Gly	Asp	Leu	Thr	Glu 485	Gly	Thr	Ala	Tyr	Thr 490	Asn	Ala	Val	Gly	Phe 495	Met
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	Asn	Ile	Val 515	Ser	Gln	Val	Tyr	Leu 520	Asn	Gly	Asp	Lys	Thr 525	Lys	Pro	Val
	Thr	Leu 530	Thr	Ile	Thr	Leu	Asn 535	Gly	Thr	Gln	Glu	Thr 540	Gly	Asp	Thr	Thr
	Pro 545	Ser	Ala	Tyr	Ser	Met 550	Ser	Phe	Ser	Trp	Asp 555	Trp	Ser	Gly	His	Asn 560
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                                                          15
tat gac acg gaa acc ggt cct cca act gtg cct ttt ctt act cct ccc
Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
            20
                                 25
                                                      30
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Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
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                             40
                                                  45
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Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
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                        55
                                             60
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### 4-31452A.ST25.txt aaa atg ggc aac ggc ctc tct ctg gac gag gcc ggc aac ctt acc tcc Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser caa aat gta acc act gtg agc cca cct ctc aaa aaa acc aag tca aac Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn ata aac ctq qaa ata tet qca ece etc aca qtt ace tea qaa gce eta . 3 Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu act gtg get gee gee gea eet eta atg gte geg gge aac aca ete ace Thr Val Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr atg caa tca cag gcc ccg cta acc gtg cac gac tcc aaa ctt agc att Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile gcc acc caa gga ccc ctc aca gtg tca gaa gga aag cta gcc ctg caa Ala Thr Gln Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu Gln aca tca qqc ccc ctc acc acc acc qat aqc aqt acc ctt act atc act Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr

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	Ser	Pro	Pro	Leu	Thr	Thr	Ala	Thr	Gly	Ser	Leu	Gly	Ile	Asp	Leu	
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Ser	Tyr	Pro	Phe	Asp	Ala	Gln	Asn	Gln	Leu	Asn	Leu	Arg	Leu	Gly	Gln	
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### 4-31452A.ST25.txt 385 390 395 400

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### 4-31452A.ST25.txt 1 5 10 15

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### 4-31452A.ST25.txt 195 200 205

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Gly	Gly	Leu	Arg 260	Ile	Asp	Ser	Gln	Asn 265	Arg	Arg	Leu	Ile	Leu 270	Asp	Val
Ser	Tyr	Pro 275	Phe	Asp	Ala	Gln	Asn 280	Gln	Leu	Asn	Leu	Arg 285	Leu	Gly	Gln
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Ala	Ile	Asn	Ala 340	Gly	Asp	Gly	Leu	Glu 345	Phe	Gly	Ser	Pro	Asn 350	Ala	Pro
Asn	Thr	Asn 355	Pro	Leu	Lys	Thr	Lys 360	Ile	Gly	His	Gly	Leu 365	Glu	Phe	Asp
Ser	Asn 370	Lys	Ala	Met	Val	Pro 375	Lys	Leu	Gly	Thr	Gly 380	Leu	Ser	Phe	Asp
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### 4-31452A.ST25.txt 385 390 395 400

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Leu	Ala	Thr 435	Val	Ser	Val	Leu	Ala 440	Lys	Gly	Ser	Leu	Ala 445	Pro	Ile	Ser
Gly	Thr 450	Val	Gln	Ser	Ala	His 455	Leu	Ile	Ile	Arg	Phe 460	Asp	Glu	Asn	Gly
Val 465	Leu	Leu	Asn	Asn	Ser 470	Phe	Leu	Asp	Pro	Glu 475	Tyr	Trp	Asn	Phe	Arg 480
Asn	Gly	Asp	Leu	Thr 485	Glu	Gly	Thr	Ala	Tyr 490	Thr	Asn	Ala	Val	Gly 495	Phe
Met	Pro	Asn	Leu 500	Ser	Ala	Tyr	Pro	Lys 505	Ser	His	Gly	Lys	Thr 510	Ala	Lys
Ser	Asn	Ile 515	Val	Ser	Gln	Val	Tyr 520	Leu	Asn	Gly	Asp	Lys 525	Thr	Lys	Pro
Val	Thr 530	Leu	Thr	Ile	Thr	Leu 535	Asn	Gly	Thr	Gln	Glu 540	Thr	Gly	Asp	Thr
Thr 545	Pro	Ser	Ala	Tyr	Ser 550	Met	Ser	Phe	Ser	Trp 555	Asp	Trp	Ser	Gly	His 560
Asn	Tyr	Ile	Asn	Glu 565	Ile	Phe	Ala	Thr	Ser 570	Ser	Tyr	Thr	Phe	Ser 575	Tyr

Ile Ala Gln Glu

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	dele	ted													
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tat ga 96	c acg	gaa	acc	ggt	cct	cca	act	gtg	cct	ttt	ctt	act	cct	ccc	
Tyr As	p Thr	Glu	Thr	Gly	Pro	Pro	Thr	Val	Pro	Phe	Leu	Thr	Pro	Pro	
		20					25					30			
ttt gt 44	a tcc	ccc	aat	999	ttt	caa	gag	agt	ccc	cct	999	gta	ctc	tct	1
Phe Va	l Ser	Pro	Asn	Gly	Phe	Gln	Glu	Ser	Pro	Pro	Gly	Val	Leu	Ser	
	35					40					45				
ttg cg 92	c cta	tcc	gaa	cct	cta	gtt	acc	tcc	aat	ggc	atg	ctt	gcg	ctc	1
Leu Ar	g Leu	Ser	Glu	Pro	Leu	Val	Thr	Ser	Asn	Gly	Met	Leu	Ala	Leu	
50					55					60					

### 4-31452A.ST25.txt aaa atg ggc aac ggc ctc tct ctg gac gag gcc ggc aac ctt acc tcc Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser caa aat gta acc act gtg agc cca cct ctc aaa aaa acc aag tca aac Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn ata aac ctg gaa ata tet gea eee etc aca gtt ace tea gaa gee eta Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu act gtg gct gcc gcc gca cct cta atg gtc gcg ggc aac aca ctc acc Thr Val Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr atg caa tca cag gcc ccg cta acc gtg cac gac tcc aaa ctt agc att Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile gee ace caa gga eee ete aca gtg tea gaa gga aag eta gee etg caa Ala Thr Gln Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu Gln aca tca ggc ccc ctc acc acc acc gat agc agt acc ctt act atc act Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr

gcc 76	tca	ccc	cct	cta	act	act	gcc	act	ggt	agc	ttg	ggc	att	gac	ttg	5
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24 Lys	Glu	Pro	Ile	Tyr	Thr	Gln	Asn	Gly	Lys	Leu	Gly	Leu	Lys	Tyr	Gly	
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	Pro	Leu	His	Val	Thr	Asp	Asp	Leu	Asn	Thr	Leu	Thr	Val	Ala	Thr	
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16 Gly	Gly	Leu	Arg	Ile	Asp	Ser	Gln	Asn	Arg	Arg	Leu	Ile	Leu	Asp	Val	
			260					265					270			
agt 64	tat	ccg	ttt	gat	gct	caa	aac	caa	cta	aat	cta	aga	cta	gga	cag	8
	Tyr	Pro	Phe	Asp	Ala	Gln	Asn	Gln	Leu	Asn	Leu	Arg	Leu	Gly	Gln	
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qqc	cct	ctt	ttt	ata	aac	tca	gcc	cac	aac	ttg	gat	att	aac	tac	aac	9
12	Pro									_						
Ory		БСС	1110	110	11511		1114	1110	11011	БСС	_	110	11011	- 7 -	71011	
	290					295					300					
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60	Gly			_									_			
-	-	цец	TYT	пец		1111	AIG	BCI	ASII		DCI	шуз	цys	Lcu		
305					310					315					320	
att	aac	cta	agc	act	acc	aag	aaa	t.t.a	atœ	t.t.t.	gac	act.	aca	acc	ata	10
08			-		_											
Val	Asn	Leu	Ser	Thr	Ala	ьys	GIA	Leu	Met	Pne	Asp	Ата	Thr	Ala	ire	
				325					330					335		
gcc 56	att	aat	gca	gga	gat	<u>a</u> aa	ctt	gaa	ttt	ggt	tca	cct	aat	gca	cca	10
	Ile	Asn	Ala	Gly	Asp	Gly	Leu	Glu	Phe	Gly	Ser	Pro	Asn	Ala	Pro	
			340					345					350			
aac 04	aca	aat	ccc	ctc	aaa	aca	aaa	att	ggc	cat	ggc	cta	gaa	ttt	gat	11
	Thr	Asn	Pro	Leu	Lys	Thr	Lys	Ile	Gly	His	Gly	Leu	Glu	Phe	Asp	
		355					360					365				
tca	aac	aag	gct	atg	gtt	cct	aaa	cta	gga	act	ggc	ctt	agt	ttt	gac	11
52 Ser	Asn	Lys	Ala	Met	Val	Pro	Lys	Leu	Gly	Thr	Gly	Leu	Ser	Phe	Asp	
	370					375					380					
	5,0					5,5					200					
ago	aca	ggt	gcc	att	aca	gta	gga	aac	aaa	aat	aat	gat	aag	cta	act	12
00	Thr															
501	-111	$\alpha$ $\mathbf{r}$ $\mathbf{\lambda}$	тта	<b>-1</b>	T 1 1 T	v u i		77011	-y 3	17011	11011	TISP	-y 3	Lou		

## 4-31452A.ST25.txt 385 390 395 400

ttg 48	tgg	acc	aca	cca	gct	cca	tct	cct	aac	tgt	aga	cta	aat	gca	gag	1	.2
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aaa 96	gat	gct	aaa	ctc	act	ttg	gtc	tta	aca	aaa	tgt	ggc	agt	caa	ata	1	L <b>2</b>
Lys	Asp	Ala	Lys	Leu	Thr	Leu	Val	Leu	Thr	Lys	Cys	Gly	Ser	Gln	Ile		
			420					425					430				
att	aat	202	at t	taa	att	tta	aat	at t	aac	aat	tta	aat	aa.	2+2	tat	7	L3
44	get	aca	gtt	lca	gtt	LLG	get	gtt	ggc	agı	LLG	get	cca	ata		4	.3
Leu	Ala	Thr	Val	Ser	Val	Leu	Ala	Val	Gly	Ser	Leu	Ala	Pro	Ile	Ser		
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	aca	gtt	caa	agt	gct	cat	ctt	att	ata	aga	ttt	gac	gaa	aat	gga	1	L3
92 Gly	Thr	Val	Gln	Ser	Ala	His	Leu	Ile	Ile	Arg	Phe	Asp	Glu	Asn	Gly		
	450					455					460						
	450					433					400						
	cta	cta	aac	aat	tcc	ttc	ctg	gac	cca	gaa	tat	tgg	aac	ttt	aga	1	L <b>4</b>
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	Gly	Asp	Leu	Thr	Glu	Gly	Thr	Ala	Tyr	Thr	Asn	Ala	Val	Gly	Phe		
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				100					100			•		100			
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	Pro	Asn	Leu	Ser	Ala	Tyr	Pro	Lys	Ser	His	Gly	Lys	Thr	Ala	Lys		

			500					505					510			
agt 84	aac	att	gtc	agt	caa	gtt	tac	tta	aac	gga	gac	aaa	act	aaa	cct	15
Ser	Asn	Ile	Val	Ser	Gln	Val	Tyr	Leu	Asn	Gly	Asp	Lys	Thr	Lys	Pro	
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gta 32	aca	cta	acc	att	aca	cta	aac	ggt	aca	cag	gaa	aca	gga	gac	aca	16
Val	Thr	Leu	Thr	Ile	Thr	Leu	Asn	Gly	Thr	Gln	Glu	Thr	Gly	Asp	Thr	
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act 80	cca	agt	gca	tac	tct	atg	tca	ttt	tca	tgg	gac	tgg	tct	ggc	cac	16
	Pro	Ser	Ala	Tyr	Ser	Met	Ser	Phe	Ser	Trp	Asp	Trp	Ser	Gly	His	
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aac 28	tac	att	aat	gaa	ata	ttt	gcc	aca	tcc	tct	tac	act	ttt	tca	tac	17
	Tyr	Ile	Asn	Glu	Ile	Phe	Ala	Thr	Ser	Ser	Tyr	Thr	Phe	Ser	Tyr	
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att 43	gcc	caa	gaa	taa			:									17
	Ala	Gln	Glu				٠									
			580													
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Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Page 51

# 4-31452A.ST25.txt 1 5 10 15

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Leu	Arg 50	Leu	Ser	Glu	Pro	Leu 55	Val	Thr	Ser	Asn	Gly 60	Met	Leu	Ala	Leu
Lys 65	Met	Gly	Asn	Gly	Leu 70	Ser	Leu	Asp	Glu	Ala 75	Gly	Asn	Leu	Thr	Ser 80
Gln	Asn	Val	Thr	Thr 85	Val	Ser	Pro	Pro	Leu 90	Lys	Lys	Thr	Lys	Ser 95	Asn
Ile	Asn	Leu	Glu 100	Ile	Ser	Ala	Pro	Leu 105	Thr	Val	Thr	Ser	Glu 110	Ala	Leu
Thr	Val	Ala 115	Ala	Ala	Ala	Pro	Leu 120	Met	Val	Ala	Gly	Asn 125	Thr	Leu	Thr
Met	Gln 130	Ser	Gln	Ala	Pro	Leu 135	Thr	Val	His	Asp	Ser 140	Lys	Leu	Ser	Ile
Ala 145	Thr	Gln	Gly	Pro	Leu 150	Thr	Val	Ser	Glu	Gly 155	Lys	Leu	Ala	Leu	Gln 160
Thr	Ser	Gly	Pro	Leu 165	Thr	Thr	Thr	Asp	Ser 170	Ser	Thr	Leu	Thr	Ile 175	Thr
Ala	Ser	Pro	Pro 180	Leu	Thr	Thr	Ala	Thr 185	Gly	Ser	Leu	Gly	Ile 190	Asp	Leu
Lys	Glu	Pro	Ile	Tyr	Thr	Gln		Gly Page	_	Leu	Gly	Leu	Lys	Tyr	Gly

Ala Pro Leu His Val Thr Asp Asp Leu Asn Thr Leu Thr Val Ala Thr Gly Pro Gly Val Thr Ile Asn Asn Thr Ser Leu Gln Thr Lys Val Thr Gly Ala Leu Gly Phe Asp Ser Gln Gly Asn Met Gln Leu Asn Val Ala Gly Gly Leu Arg Ile Asp Ser Gln Asn Arg Arg Leu Ile Leu Asp Val Ser Tyr Pro Phe Asp Ala Gln Asn Gln Leu Asn Leu Arg Leu Gly Gln Gly Pro Leu Phe Ile Asn Ser Ala His Asn Leu Asp Ile Asn Tyr Asn . 300 Lys Gly Leu Tyr Leu Phe Thr Ala Ser Asn Asn Ser Lys Lys Leu Glu Val Asn Leu Ser Thr Ala Lys Gly Leu Met Phe Asp Ala Thr Ala Ile Ala Ile Asn Ala Gly Asp Gly Leu Glu Phe Gly Ser Pro Asn Ala Pro Asn Thr Asn Pro Leu Lys Thr Lys Ile Gly His Gly Leu Glu Phe Asp Ser Asn Lys Ala Met Val Pro Lys Leu Gly Thr Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Thr Val Gly Asn Lys Asn Asn Asp Lys Leu Thr Page 53

Leu	Trp	Thr	Thr	Pro 405	Ala	Pro	Ser	Pro	Asn 410	Cys	Arg	Leu	Asn	Ala 415	Glu
Lys	Asp	Ala	Lys 420	Leu	Thr	Leu	Val	Leu 425	Thr	Lys	Cys	Gly	Ser 430	Gln	Ile
Leu	Ala	Thr 435	Val	Ser	Val	Leu	Ala 440	Val	Gly	Ser	Leu	Ala 445	Pro	Ile	Ser
Gly	Thr 450	Val	Gln	Ser	Ala	His 455	Leu	Ile	Ile	Arg	Phe 460	Asp	Glu	Asn	Gly
Val 465	Leu	Leu	Asn	Asn	Ser 470	Phe	Leu	Asp	Pro	Glu 475	Tyr	Trp	Asn	Phe	Arg 480
Asn	Gly	Asp	Leu	Thr 485	Glu	Gly	Thr	Ala	Tyr 490	Thr	Asn	Ala	Val	Gly 495	Phe
Met	Pro	Asn	Leu 500	Ser	Ala	Tyr	Pro	Lys 505	Ser	His	Gly	Lys	Thr 510	Ala	Lys
Ser	Asn	Ile 515	Val	Ser	Gln	Val	Tyr 520	Leu	Asn	Gly	Asp	Lys 525	Thr	Lys	Pro
Val	Thr 530	Leu	Thr	Ile	Thr	Leu 535	Asn	Gly	Thr	Gln	Glu 540	Thr	Gly	Asp	Thr
Thr 545	Pro	Ser	Ala	Tyr	Ser 550	Met	Ser	Phe	Ser	Trp 555	Asp	Trp	Ser	Gly	His 560
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Ile Ala Gln Glu

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580

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Codes for a mutated Human Adenovirus type 5 fiber protein. <223>

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tat gac acg gaa acc ggt cct cca act gtg cct ttt ctt act cct ccc

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro

20 25 30

1

1

ttt gta tcc ccc aat ggg ttt caa gag agt ccc cct ggg gta ctc tct

COBYONOW . CERCOI

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser

40 35 45

ttg cgc cta tcc gaa cct cta gtt acc tcc aat ggc atg ctt gcg ctc

Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu

50 55 60

## 4-31452A.ST25.txt aaa atg ggc aac ggc ctc tct ctg gac gag gcc ggc aac ctt acc tcc Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser caa aat gta acc act gtg agc cca cct ctc aaa aaa acc aag tca aac Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn ata aac ctq qaa ata tct qca ccc ctc aca qtt acc tca qaa qcc cta Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu act gtg gct gcc gcc gca cct cta atg gtc gcg ggc aac aca ctc acc Thr Val Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr atg caa tca cag gcc ccg cta acc gtg cac gac tcc aaa ctt agc att Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile gcc acc caa gga ccc ctc aca gtg tca gaa gga aag cta qcc ctg caa Ala Thr Gln Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu Gln aca tca qqc ccc ctc acc acc acc qat aqc aqt acc ctt act atc act

Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr

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	Ser	Pro	Pro	Leu	Thr	Thr	Ala	Thr	Gly	Ser	Leu	Gly	Ile	Asp	Leu	
			180					185					190			
222	<b>~</b> ~~	999	5++	+-+	202	<b>a</b> aa	22+	~~~	222	at a	<b>a</b> aa	ata	224	+	~~~	c
24	gag										-		_			6
Lys	Glu		He	Tyr	Thr	GIn		GIY	гàз	Leu	GIY		Lys	Tyr	GIA	
		195					200					205				
_	cct	ttg	cat	gta	aca	gac	gac	cta	aac	act	ttg	acc	gta	gca	act	6
72 Ala	Pro	Leu	His	Val	Thr	Asp	Asp	Leu	Asn	Thr	Leu	Thr	Val	Ala	Thr	
	210					215					220					
ggt 20	cca	ggt	gtg	act	att	aat	aat	act	tcc	ttg	caa	act	aaa	gtt	act	7
Gly	Pro	Gly	Val	Thr	Ile	Asn	Asn	Thr	Ser	Leu	Gln	Thr	Lys	Val	Thr	
225					230					235					240	
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	Ala	Leu	Gly	Phe	Asp	Ser	Gln	Gly	Asn	Met	Gln	Leu	Asn	Val	Ala	
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gga 16	gga	cta	agg	att	gat	tct	caa	aac	aga	cgc	ctt	ata	ctt	gat	gtt	8
	Gly	Leu	Arg	Ile	Asp	Ser	Gln	Asn	Arg	Arg	Leu	Ile	Leu	Asp	Val	
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Lys	Gly	Leu	Tyr	Leu	Phe	Thr	Ala	Ser	Asn	Asn	Ser	Lys	Lys	Leu	Glu	
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gcc .56	att	aat	gca	gga	gat	999	ctt	gaa	ttt	ggt	tca	cct	aat	gca	cca	10
	Ile	Asn	Ala	Gly	Asp	Gly	Leu	Glu	Phe	Gly	Ser	Pro	Asn	Ala	Pro	
			340					345					350			
aac 04	aca	aat	ccc	ctc	aaa	aca	aaa	att	ggc	cat	ggc	cta	gaa	ttt	gat	11
	Thr	Asn	Pro	Leu	Lys	Thr	Lys	Ile	Gly	His	Gly	Leu	Glu	Phe	Asp	
		355					360					365				
tca 52	aac	aag	gct	atg	gtt	cct	aaa	cta	gga	act	ggc	ctt	agt	ttt	gac	11
	Asn	Lys	Ala	Met	Val	Pro	Lys	Leu	Gly	Thr	Gly	Leu	Ser	Phe	Asp	
	370					375					380					
agc 00	aca	ggt	gcc	att	aca	gta	gga	aac	aaa	aat	aat	gat	aag	cta	act	12
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## 4-31452A.ST25.txt 385 390 395 400

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				405					410					415		
aaa 96	gat	gct	aaa	ctc	act	ttg	gtc	tta	aca	aaa	tgt	ggc	agt	caa	ata	12
	Asp	Ala	Lys	Leu	Thr	Leu	Val	Leu	Thr	Lys	Cys	Gly	Ser	Gln	Ile	
			420					425					430			
ctt 44	gct	aca	gtt	tca	gtt	ttg	gct	gct	gca	ggc	agt	ttg	gct	cca	ata	13
	Ala	Thr	Val	Ser	Val	Leu	Ala	Ala	Ala	Gly	Ser	Leu	Ala	Pro	Ile	
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Gly	Val	Leu	Leu	Asn	Asn	Ser	Phe	Leu	Asp	Pro	Glu	Tyr	Trp	Asn	Phe	•
465					470					475					480	
88			_				ggc						_	_		14
Arg	Asn	Gly	Asp	Leu	Thr	Glu	Gly	Thr	Ala	Tyr	Thr	Asn	Ala	Val	Gly	
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Lys Glu Pro Ile Tyr Thr Gln Asn Gly Lys Leu Gly Leu Lys Tyr Gly

### 4-31452A.ST25.txt 195 200 205

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Gly	Ala	Leu	Gly	Phe 245	Asp	Ser	Gln	Gly	Asn 250	Met	Gln	Leu	Asn	Val 255	Ala
Gly	Gly	Leu	Arg 260	Ile	Asp	Ser	Gln	Asn 265	Arg	Arg	Leu	Ile	Leu 270	Asp	Val
Ser	Tyr	Pro 275	Phe	Asp	Ala	Gln	Asn 280	Gln	Leu	Asn	Leu	Arg 285	Leu	Gly	Gln
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Val	Asn	Leu	Ser	Thr 325	Ala	Lys	Gly	Leu	Met 330	Phe	Asp	Ala	Thr	Ala 335	Ile
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Tyr Ile Ala Gln Glu

### 4-31452A.ST25.txt 385 390 395 400

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Lys	Asp	Ala	Lys 420	Leu	Thr	Leu	Val	Leu 425	Thr	Lys	Cys	Gly	Ser 430	Gln	Ile
Leu	Ala	Thr 435	Val	Ser	Val	Leu	Ala 440	Ala	Ala	Gly	Ser	Leu 445	Ala	Pro	Ile
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Gly 465	Val	Leu	Leu	Asn	Asn 470	Ser	Phe	Leu	Asp	Pro 475	Glu	Tyr	Trp	Asn	Phe 480
Arg	Asn	Gly	Asp	Leu 485	Thr	Glu	Gly	Thr	Ala 490	Tyr	Thr	Asn	Ala	Val 495	Gly
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Lys	Ser	Asn 515	Ile	Val	Ser	Gln	Val 520	Tyr	Leu	Asn	Gly	Asp 525	Lys	Thr	Lys
Pro	Val 530	Thr	Leu	Thr	Ile	Thr 535	Leu	Asn	Gly	Thr	Gln 540	Glu	Thr	Gly	Asp
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                                                          15
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Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
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                                 25
                                                      30
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Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
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                             40
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ata	aac	ctg	gaa	ata	tct	gca	ccc	ctc	aca	gtt	acc	tca	gaa	gcc	cta	3
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84	•														Thr	
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80											aag Lys		_			4
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• • • •	11011		501			_, _		204			1101	1114			110	
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•				
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4-31452A.ST25.txt 1 5 10 15

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4-31452A.ST25.txt 195 200 205

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4-31452A.ST25.txt 385 390 395 400

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Tyr Ile Ala Gln Glu

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                                                          15
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Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
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                                 25
                                                      30
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                                                                       1
Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
        35
                             40
                                                  45
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Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
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                        55
                                             60
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24											gga		_			6
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4-31452A.ST25.txt 1 5 10 15

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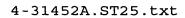
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Page 83

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4-31452A.ST25.txt 1 5 10 15

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4-31452A.ST25.txt 195 200 205

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      primer bind
<222>
      (1)..(\overline{3}8)
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       24
gatattggag ccaaactgcc ggccaaaact gaaactgt
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       25
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       36
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      DNA
<213> Artificial
<220>
<223> PCR primer
<220>
<221>
      primer_bind
      (1)..(\overline{3}6)
<222>
<400>
       25
acagtttcag ttttggctaa aggcagtttg gctcca
36
       26
<210>
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       36
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      DNA
<213>
      Artificial
<220>
<223>
      PCR primer
```

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4-31452A.ST25.txt
<220>
<221>
       primer bind
<222>
       (1)..(\bar{3}6)
       26
<400>
tggagccaaa ctgcctttag ccaaaactga aactgt
<210>
       27
<211>
       36
<212>
      DNA
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      Artificial
<220>
<223>
      PCR primer
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<221>
      primer_bind
      (1)..(\overline{3}6)
<222>
<400>
       27
gtttcagttt tggctgttgg cagtttggct ccaata
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       28
<211>
       36
<212>
      DNA
<213>
      Artificial
<220>
<223>
      PCR primer
<220>
       primer_bind
<221>
      (1)..(36)
<222>
<400>
       28
tattggagcc aaactgccaa cagccaaaac tgaaac
36
<210>
       29
<211>
       36
<212> DNA
<213> Artificial
```

<211>

36

```
4-31452A.ST25.txt
<220>
<223>
       PCR primer
<220>
<221> primer bind
<222>
      (1)..(36)
<400>
       29
gtttcagttt tggctgctgc aggcagtttg gctcca
36
<210>
       30
<211>
       36
<212>
      DNA
<213>
      Artificial
<220>
<223>
      PCR primer
<220>
      primer_bind
<221>
      (1)..(36)
<222>
<400>
       30
tggagccaaa ctgcctgcag cagccaaaac tgaaac
36
<210>
       31
<211>
       36
<212>
       DNA
      Artificial
<213>
<220>
<223>
       PCR primer
<220>
<221>
       primer_bind
<222>
      (1)..(\overline{3}6)
<400>
       31
gctcatctta ttatagaatt cgacgaaaat ggagtg
36
<210>
       32
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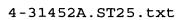
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4-31452A.ST25.txt
<212>
       DNA
       Artificial
<213>
<220>
<223>
       PCR primer
<220>
<221>
      primer_bind
<222>
       (1)..(36)
      32
<400>
cactccattt tcgtcgaatt ctataataag atgagc
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<210>
       33
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<212>
       DNA
       Artificial
<213>
<220>
<223>
      PCR primer
<220>
       primer bind
<221>
<222>
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<400>
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       34
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       39
<212>
      DNA
<213>
       Artificial
<220>
<223>
      PCR primer
<220>
      primer_bind
<221>
<222>
      (1)..(\overline{3}9)
<400>
       34
gacaatgtta cttttggcag tgtgagattt tggataagc
```

```
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       DNA
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        Artificial
<220>
        PCR primer
<223>
<220>
<221>
        primer bind
<222>
       (1)..(\overline{3}5)
<400>
        35
ctaaccatta cactaaacca ggaaacagga gacac
35
<210>
        36
<211>
        35
<212>
        DNA
        Artificial
<213>
<220>
·<223>
        PCR primer
<220>
<221>
        primer_bind
<222>
        (1)..(35)
<400>
        36
gtgtctcctg tttcctggtt tagtgtaatg gttag
35
<210>
        37
<211>
        33
<212>
       DNA
<213>
        Artificial
<220>
<223>
        PCR primer
<220>
<221>
        primer_bind
<222>
        (1)..(33)
<400>
        37
```

```
4-31452A.ST25.txt
ataagatttg acgaaactgg agtgctacta aac
33
<210>
       38
<211>
       33
<212>
      DNA
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      Artificial
<220>
<223>
       PCR primer
<220>
<221>
      primer_bind
      (1)..(33)
<222>
<400>
      38
gtttagtagc actccagttt cgtcaaatct tat
<210>
      39
<211>
      33
<212>
      DNA
<213>
       Artificial
<220>
<223>
       PCR primer
<220> ,
       primer_bind
<221>
<222>
       (1)..(33)
<400>
tttgacgaaa atggacacct actaaacaat tcc
<210>
       40
<211>
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<212>
      DNA
      Artificial
<213>
<220>
<223>
       PCR primer
<220>
<221>
       primer_bind
```

```
4-31452A.ST25.txt
      (1)..(33)
<222>
<400>
ggaattgttt agtaggtgtc cagtttcgtc aaa
33
<210>
       41
<211>
       33
<212>
      DNA
<213> Artificial
<220>
<223>
      PCR primer
<220>
       primer_bind
<221>
      (1)..(\overline{3}3)
<222>
<400>
aacctatcag cttatgcaaa atctcacggt aaa
33
<210>
       42
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       32
<212>
      DNA
      Artificial
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<220>
<223>
       PCR primer
<220>
<221>
       primer_bind
<222>
       (1)..(32)
<400>
tttaccgtga gattttgcat aagctgatag gt
32
<210>
       43
<211>
       10
<212>
       PRT
       Artificial
<213>
<220>
<223>
       cRGD consensus sequence
```





<400> 43

His Cys Asp Cys Arg Gly Asp Cys Phe Cys 1 5